UNIVERSITI TEKNOLOGI MARA

SPEECH USER INTERFACES FOR AN APPLICATION OF ROUTE NAVIGATION SYSTEM

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ABSTRACT

Speech Technology has become increasingly important both in personal use and in industrial. The technology has been improving and an Automatic Speech Recognition (ASR) has been used widely in recent years. The purpose of this study is to develop a knowledge base for route navigation system and to construct the dialogs for supporting route navigation process in speech application. The study emphasizes the construction of speech dialogs in Malay Language that cover the lack of capabilities of ASR System in general and tested the 'live system' by speech with several users. A prototype of a Phone-based Speech Assisted System is developed from which a knowledge base of rules was constructed using Rapid Application Developer (RAD Application) as a toolkit for development of Speech Application. The simulation was done to test the effectiveness of the dialogs design and the application itself. Assumption has been made, as Malay Speech Recognition already exists. The data was collected through an observation of Shah Alam area, while questionnaires were distributed to investigate user behavior in route findings process. Prior to the development of navigational and wayfinding behavior among Malaysian community, it is crucial to study the navigational and wayfinding knowledge and the spatial representation of wayfinding behavior among them.

CHAPTER 1

INTRODUCTION

1.1 Overview of the Research

The future growth of the computer industry and the acceptance of computer methods will depend largely on the successful establishment of effective human-machine communications. Increasingly in the next decade, human will become the prime focus of system design. The computer is there to serve, to obtain information and to help them to do their job (Dix et al., 1997).

At the turn of the millennium, there has been significant progress in the development of ASR System (Automatic Speech Recognition). As a result of technical advances in speech modeling techniques, recognition search strategies, and other areas, combined with the increased processing power of workstations and personal computers, large vocabulary continuous speech recognition is now feasible even under the constraints and demanding conditions imposed by the Public Switch Telephone Network (PSTN). These new technical capabilities, along with advances in Natural Language Processing (NLP), have opened up the possibility of a wide range of new services and applications, and have made it possible to incorporate more natural styles of human-computer verbal interactions (Zue & Cole, 2000).

Speech Technology has become increasingly important as it is used to improve the existing user interfaces and to support new means of human interaction with computers. It allows hands-free use of computers and supports access to computing capabilities away from the desk and over the telephone. Furthermore, it is being used by many enterprises to handle customer calls and internal requests for access to information, resources and services.